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### REMARKS

Applicants submit that claims 1, 6, 9, 12, 13, and 16 are amended hereby; and claims 2-5, 7-8, 10-11 and 14-15 stand as originally filed.

All amendments are directly sourced from the originally filed material (e.g., Paragraphs [0011] - [0013]; and FIG. 2), with no new matter being entered.

#### Claim Rejection - 35 USC §112

Claims 1-16 are rejected under 35 U.S.C 112, first paragraph, because the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification provides only support for one lithium or carbon at each of the vertexes and not for a plurality of either the lithium or carbon at a vertex of either the triangle or the hexagon.

Responsive to the rejections thereto, Applicants have amended independent claims 1, 9, and 12. Support for amended claims 1, 9, and 12 can be found within the specification (e.g., Paragraphs [0012] and [0013]; and FIG. 2). Keeping in mind the comments offered by the Examiner, Applicants have amended claims 1, 9, and 12. In particular, Applicants now essentially only provide one lithium ion at a corresponding one of the three vertexes of the equilateral triangle unit, in amended claims 1 and 12, and provide just one carbon atom at a corresponding one of the six vertexes of the equilateral hexagon unit, in amended claim 9. Any person skilled in the art would be able to make and use the presently claimed invention according to the disclosure, as originally submitted. Therefore, independent claims 1, 9, and 12 are now in allowable form. Claims 2-8 depend directly or indirectly from

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claim 1, claims 10-11 depend directly or indirectly from claim 9, and claims 13-16 depend directly or indirectly from claim 12. These claims are now also in allowable form. Therefore, withdrawal of the rejections of claims 1-16 is requested respectfully.

**Claim Rejection - 35 USC §112**

Claim 6 is rejected under 35 U.S.C 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 6, it is unclear to what term(s) the word "thickness" found in lines 1 makes reference to.

Responsive to the rejection thereto, Applicants have amended claim 6, and submit that amended claim 6 particularly points out that the word "thickness" refers to "thickness of the separation membrane". Therefore, Applicants submit that claim 6 is now clear, definite, and in allowable form, and withdrawal of the rejection of claim 6 is requested respectfully.

**Claim Rejection - 35 USC §102**

Claims 1-13, 15, 16 are rejected under 35 U.S.C 102(e), as being anticipated by Blain et al. (US 2004/0076810, hereinafter Blain et al. '810).

Responsive to the rejection thereto, Applicants have amended independent claims 1, 9, and 12 and hereby otherwise traverse the rejection. Applicants submit that independent claims 1, 9, and 12, as amended, are novel, unobvious, and patentable over Blain et al. '810 or

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any of the other cited references, taken alone or in combination.

Independent claim 1, as amended, recites in part:

...wherein each of the molecular layers comprises a plurality of equilateral triangle units, each of the equilateral triangle units comprises three lithium ions and a carbon atom, each of the three lithium ions is respectively at a corresponding one of the three vertexes of the equilateral triangle unit, and a carbon atom is at a center of the equilateral triangle unit.

Applicants submit that such a separation membrane, as set forth in amended claim 1, is neither taught nor suggested by Blain et al. '810 or any of the other cited references, taken alone or in combination.

Blain et al. '810 teaches

"...[t]he first layer 10 is in the form of a laminate comprising several layer 14...a flexible graphite sheet" (Paragraph [0024]) and "...[u]pon exposure to high temperature, the intercalant within the graphite decomposes and volatilizes, causing the particles of intercalated graphite to expand in dimension as much as 80 or more times its original volume in an accordion-like fashion in the "c" direction, i.e. in the direction perpendicular to the crystalline planes of the graphite. The exfoliated graphite particles ... are referred as worms, ... may be compressed together into flexible sheet..."(Paragraphs [0050] and [0062]).

Firstly, Applicants submit that the flexible graphite sheet 14 of Blain et al. '810 **only includes carbon atoms** therein according to the method for manufacturing the flexible graphite sheet 14 mentioned in Blain et al.

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**'810. The intercalant in the graphite decomposes and volatilizes during heating process, thereby forming the exfoliated graphite particles. The exfoliated graphite particles are configured for forming the flexible graphite sheet 14 by compression thereof. As such, there is no intercalant in the resulting flexible graphite sheet 14. Moreover, Blain et al. '810 fails to disclose or suggest the intercalant can be a substance containing lithium ions. In fact, the word "lithium" does not appear at all in Blain et al. '810, as per a search of the database available at www.uspto.gov. Therefore, Applicants submit that Blain et al. '810 clearly fails to disclose or suggest that "each of the equilateral triangle units comprises three lithium ions and a carbon atom", as set forth in amended claim 1.**

Secondly, Applicants acknowledge that the flexible graphite sheet 14 of Blain et al. '810 includes a number of equilateral triangle units, according to an inherent structure of graphite. However, as asserted above, the equilateral triangle unit of Blain et al. '810 is only constituted of carbon atoms. That is, carbon atoms are located at the three vertexes and a center of the equilateral triangle unit. Therefore, Applicants submit that Blain et al. '810 fails to disclose or suggest that **"each of the three lithium ions is respectively at a corresponding one of the three vertexes of the equilateral triangle unit, and a carbon atom is at a center of the equilateral triangle unit"**, as set forth in amended claim 1.

For the reasons above, Applicants submit that both the composition and the structure of the flexible graphite sheet 14 are patentably distinct from that of the molecular layers in claim 1. Therefore, even if a number of flexible graphite sheets 14 are adhered to each other to form

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the first layer 10 of Blain et al. '810, the first layer 10 of Blain et al. '810 could not be regarded as the separation membrane in amended claim 1.

Likewise, independent claim 9, as amended, recites in part:

... each of the equilateral hexagon units comprises six carbon atoms and six lithium ions, each of the six carbon atoms is respectively located at a corresponding one of the six vertexes of the equilateral hexagon unit, and the six lithium ions are intercalated in a center of the equilateral hexagon unit.

Likewise, independent claim 12, as amended, recites in part:

... wherein each of the equilateral triangle units comprises three lithium ions and a means, each of the three lithium ions is respectively at a corresponding one of the three vertexes of the equilateral triangle unit and the means of the equilateral triangle unit is configured for attracting said three lithium ions towards a center of the equilateral triangle unit.

Applicants submit that such separation membranes, as set forth in claims 9 and 12, are neither taught, disclosed, nor suggested Blain et al. '810 or any of the other cited references, taken alone or in combination.

Applicants acknowledge that the flexible graphite sheet 14 of Blain et al. '810 includes a number of equilateral triangle units or the equilateral hexagon units according to inherent structure of graphite. For reasons similar to those asserted above in relation to claim 1, even though Blain et al. '810 teaches the flexible graphite sheet 14, Blain et al. '810 fails to teach or suggest that each of the equilateral hexagon units in the flexible graphite sheet 14 "comprises six carbon atoms and six lithium ions, ....",

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as in amended claim 9, and each of the equilateral triangle units in the flexible graphite sheet 14 "comprises three lithium ions and a mean, ....", as per amended claim 12. Essentially, Blain et al. '810 fails to teach or suggest a separation membrane that incorporates lithium ions therein.

Accordingly, Applicants submit claims 1, 9, and 12 are novel, unobvious, and patentable over Blain et al. '810 or any of the other cited references, taken alone or in combination. Reconsideration and withdrawal of the rejection and allowance of claims 1, 9, and 12 are respectfully requested.

Claims 2-8 depends directly or indirectly from claim 1, claims 10-11 depend directly or indirectly from claim 9, and claims 13, 15, and 16 depend directly or indirectly from claim 12, and therefore such dependent claims should also be allowable.

**Claim Rejection - 35 USC §102**

Claims 1, 4-16 are rejected under 35 U.S.C 102(e), as being anticipated by Greinke et al. (US 2003/0118826, hereinafter Greinke et al. '826).

Responsive to the rejection thereto, Applicants have amended independent claims 1, 9, and 12 and hereby otherwise traverse the rejection. Applicants respectfully submit that independent claims 1, 9, and 12 are novel, unobvious, and patentable over Greinke et al. '826 or any of the other cited references, taken alone or in combination.

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Greinke et al. '826 teaches

"...[u]pon exposure to high temperature, the intercalant within the graphite decomposes and volatilizes, causing the particles of intercalated graphite to expand in dimension as much as 80 or more times its original volume in an accordion-like fashion in the "c" direction, i.e. in the direction perpendicular to the crystalline planes of the graphite. The exfoliated graphite particles ... are referred as worms, ... may be compressed together into flexible sheet..."(Paragraphs [0029] and [0047]) and "...the flexible graphite sheet...can then be ...to form thermal interface 20 ". (Paragraph [0048]; emphasis added).

Applicants submit that Greinke et al. '826 teaches the flexible graphite sheet similar to the Blain et al. '810 teaches. As with Blain et al. '810, the word "lithium" does not appear at all in Greinke et al. '826, as per a search of the database available at [www.uspto.gov](http://www.uspto.gov). Thus, for reasons similar to those asserted above in relation to traversing the rejection under Blain et al. '810, Applicants submit claims 1, 9, and 12 are novel, unobvious, and patentable over Greinke et al. '826, or any of the other cited references, taken alone or in combination. Reconsideration and withdrawal of the rejection and allowance of claims 1, 9 and 12 are respectfully requested. Claims 4-8 depends directly or indirectly from claim 1, claims 10-11 depend directly or indirectly from claim 9, and claims 13-16 depend directly or indirectly from claim 12, and therefore such dependent claims should also be allowable.

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**Claim Rejection - 35 USC §102**

Claims 1, 4-13, 15, 16 are rejected under 35 U.S.C 102(e), as being anticipated by Norley et al. (US 2003/0044614, hereinafter Norley et al. '614).

Responsive to the rejection thereto, Applicants have amended independent claims 1, 9 and 12 and hereby otherwise traverse the rejection. Applicants submit that independent claims 1, 9, and 12 are novel, unobvious, and patentable over Norley et al. '614 or any of the other cited references, taken alone or in combination.

Norley et al. '614 teaches

“...[u]pon exposure to high temperature, the intercalant within the graphite decomposes and volatilizes, causing the particles of intercalated graphite to expand in dimension as much as 80 or more times its original volume in an accordion-like fashion in the “c” direction, i.e. in the direction perpendicular to the crystalline planes of the graphite. The exfoliated graphite particles ... are referred as worms,... may be compressed together into flexible sheet...”. (Paragraphs [0021] and [0033]; emphasis added).

Applicants submit that Norley et al. '614 teaches the flexible graphite sheet similar to the Blain et al. '810 teaches. As with Blain et al. '810 and Greinke et al. '826, the word “lithium” does not appear at all in Norley et al. '614, as per a search of the database available at [www.uspto.gov](http://www.uspto.gov). For reasons similar to those asserted above in relation to traversing the rejection under Blain et al. '810, Applicants submit that



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both the composition and the structure of the flexible graphite sheet 14 are distinct from that of the molecular layers in claim 1.

Additionally, Norley et al. '614 further teaches "...the flexible graphite sheet is passed through a vessel and impregnated with the resin system ... " (Paragraph [0038]) and "...the resin present in the impregnated sheets can act as the adhesive for the composite material". (Paragraph [0041]; emphasis added). As such, Applicants submit that the combination of the flexible graphite sheet and the resin is not chemical but physical. Any person skilled in the art should know **the combination of the flexible graphite sheet and the resin is not between atoms or ions**. That is, the impregnation of the resin into the flexible graphite sheet cannot change the inner atomic or molecular structure of the flexible graphite sheet. The resin is only impregnated and filled into spaces in the flexible graphite sheet. The resin and the carbon atoms in the flexible graphite sheet cannot form either the equilateral triangle unit or the hexagon unit constituted with atoms or ions. Therefore, Applicants submit that Norley et al. '614 fails to disclose or suggest limitations, as set forth in amended claims 1, 9, and/or 12.

Reconsideration and withdrawal of the rejection and allowance of claims 1, 9, and 12 are respectfully requested.

Claims 4-8 depends directly or indirectly from claim 1, claims 10-11 depend directly or indirectly from claim 9, and claims 13, 15 and 16 depend directly or indirectly from claim 12, and therefore such dependent claims should also be allowable.

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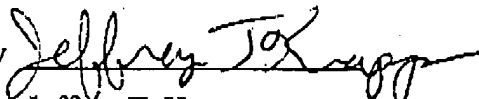
**Claim Rejection - 35 USC §103**

Claims 2 and 3 are rejected under 35 U.S.C 103 (a), as being unpatentable over either Greinke et al. '826 or Norley et al. '614.

Responsive to the rejection of claims 2 and 3, Applicants submit that amended claim 1 is novel, unobvious, and patentable for the reasons set forth above. Claims 2 and 3 depend directly and indirectly from claim 1. Accordingly, Applicants submit that claims 2 and 3 are now novel, unobvious, and patentable, the allowance of which is hereby respectfully requested.

In view of the foregoing, Applicant submits that the present application is now in condition for allowance, and an action to such effect is earnestly solicited.

Respectfully submitted,  
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